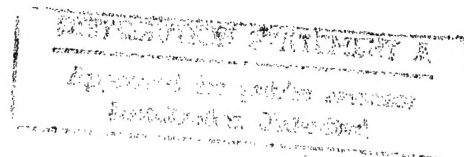


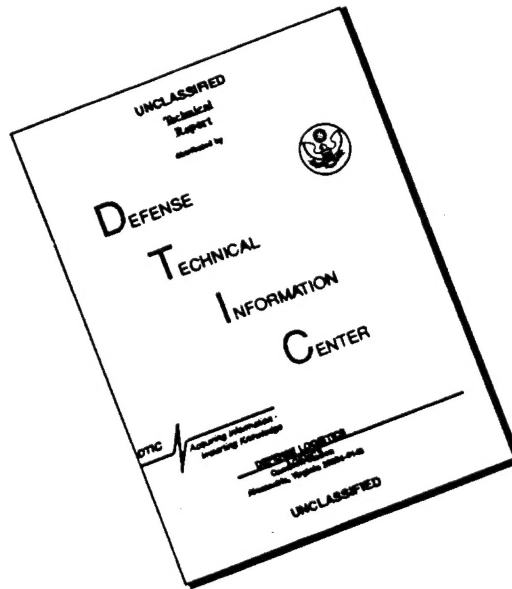
"A Phase I Archaeological Survey of the
Proposed Timber Harvest Area along 745th
Battalion Road and an Adjacent Food Plot Area
on the Fort Knox Military Reservation, Hardin
County, Kentucky" by Pamela A. Schenian and
Stephen T. Mocas, Fort Knox. December 1995.



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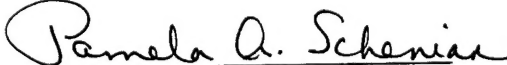
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A Phase I Archaeological Survey
of the Proposed Timber Harvest Area
along 745th Battalion Road and an Adjacent Food Plot Area
on the Fort Knox Military Reservation,
Hardin County, Kentucky

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December 1995


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ABSTRACT

In November 1995, the Fort Knox contract archaeology staff conducted a Phase I archaeological survey of a proposed timber harvest area along 745th Battalion Road on the Fort Knox Military Reservation, Hardin County, Kentucky. The proposed timber harvest area is 2.7 km (1.7 miles) long, and 30 to 50 m wide (100-160 feet), encompassing approximately 10.9 ha (26.9 acres). Only selected trees will be harvested. No archaeological sites were recorded in the proposed timber harvest area. However, one archaeological site had been recorded as an accidental discovery near the proposed timber harvest area. Because this site has not been previously described in a report of investigations, it is discussed in this report. Site 15Hd494 is a multi-component (Late Archaic and Early Woodland) camp or special activity site with a possible early nineteenth century historic occupation. The site is considered potentially eligible for the National Register. Since 15Hd494 lies completely outside the proposed timber area, it is recommended that the timber harvest be conducted as proposed. Since 15Hd494 is being damaged by vehicle traffic, it is recommended that the site be posted as off-limits to unauthorized vehicles.

MANAGEMENT SUMMARY

In accordance with Army Regulation 420-40 and other federal laws and regulations, the Fort Knox contract archaeology staff conducted a Phase I archaeological survey of a proposed timber harvest area along 745th Battalion Road on the Fort Knox Military Reservation, Hardin County, Kentucky. A limited number of trees will be harvested within the disjoint wooded strips that compose the project area. One archaeological site, 15Hd494, was found near, but outside the timber harvest area. The site is considered potentially eligible for the National Register, but the proposed timber harvest will have no effect on the site. It is recommended that the timber harvest be conducted as proposed. It is further recommended that 15Hd494 be posted as off-limits to unauthorized vehicle traffic, which is currently damaging the site.

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INTRODUCTION

In November 1995, the Fort Knox contract archaeology staff performed a Phase I archaeological survey of a proposed timber harvest area along 745th Battalion Road on the Fort Knox Military Reservation, Hardin County, Kentucky (Figure 1). The area to be harvested is approximately 30 to 50 m (100-165 feet) wide and 2.7 km (1.67 miles) long, encompassing approximately 10.90 ha (26.93 acres) immediately adjacent to 745th Battalion Road and in the floodplain of Cedar Creek. Only selected trees, which were marked with blue paint by the foresters prior to the archaeological survey, will be cut. The proposed harvest area begins directly adjacent to the south side of 745th Battalion Road on the ridge top (Hunting Area 83); on the downward slope the project area shifts to the north side of the road (Hunting Area 84). Selected trees will be harvested from both sides of the power line clearing that forms a diagonal strip northeastward across the floodplain until it intersects with the road. The third segment of the proposed timber area extends northward along the west side of the road until it reaches the observation tower of the Cedar Creek range.

In December 1993, two Fort Knox Fish and Wildlife employees reported the discovery of a biface in a wildlife food plot in which they were working and brought the artifact to the contract staff archaeologists. The archaeologists investigated the find spot in March 1994, determined that it was an extensive archaeological site (Figures B-1 and B-2), and obtained state site number 15Hd494 for this location. The site covers a 300 m by 25 m, or 7,500 m² (1.8 acre) area. A controlled surface collection was made of a portion of 15Hd494 in October 1995 (Figure B-3). The site had never been discussed in a formal report of investigations, however, and the Chief of the Environmental Management Division (EMD), Directorate of Public Works (DPW), at Fort Knox, recommended that a discussion of it should be included with this project. Although the site lies completely outside the proposed timber area, it is discussed in this report for several reasons. The site is very close to a proposed undertaking, and there is a need to present information about 15Hd494 to the State Historic Preservation Officer (SHPO) and various Fort Knox units in order to initiate the consultation and coordination process to protect 15Hd494. Site protection is needed because 15Hd494 is being damaged by unauthorized vehicle traffic.

All documents needed to perform basic Phase I literature searches for the installation (e.g., site forms, reports of previous investigations, historic maps) are on file at the Cultural Resource Management office of the Directorate of Public Works (DPW), Fort Knox, and are updated regularly. No file check therefore was made with the Office of State

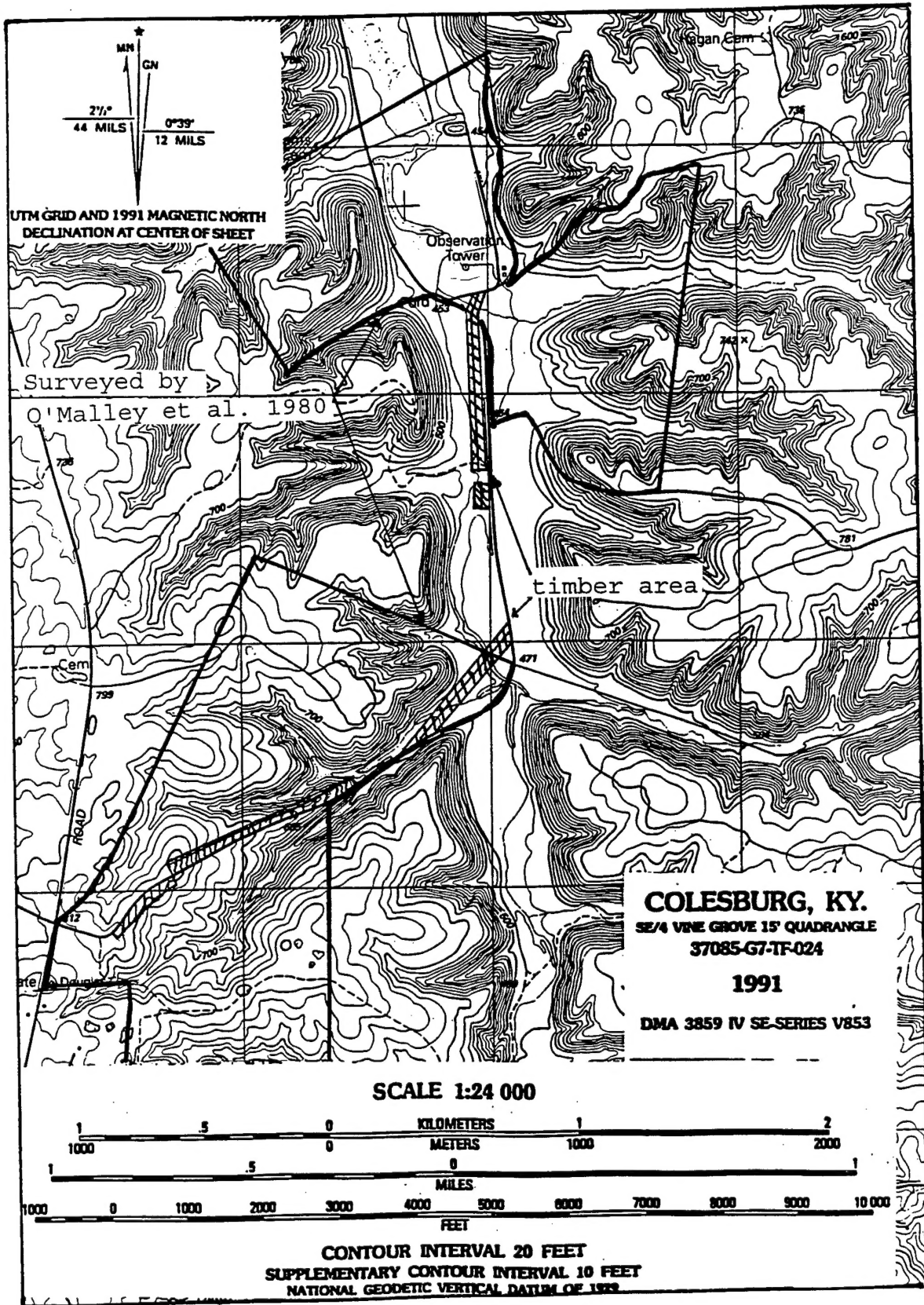


Figure 1. Location of Project Area.

Archaeology and the Kentucky Heritage Council specifically for this project.

A literature search revealed that most of the project area had been previously surveyed. The portion of the project area on the west side of Cedar Creek had been surveyed by O'Malley et al. (1980) and no sites were reported, therefore, one high potential knoll was spot-checked, but the rest of this area was not reexamined. A small area west of Cedar Creek and the entire portion of the project area east of Cedar Creek (the northernmost 1100 m), was inspected during the current survey.

The project area is in the Plain section of the Penny-rile cultural landscape, in the dissected uplands and in the floodplain of Cedar Creek. Elevations in the project area range from 450 to 805 feet. Soils are classified as Garmon-Fredrick association (U.S.D.A. 1975: General Soil Map). Drainage in the project area is into Cedar Creek, a tributary of the Rolling Fork branch of the Salt River.

The archaeological survey was conducted in preparation for the removal of selected trees from the wooded area along 745th Battalion Road and in the floodplain of Cedar Creek. The literature review and archaeological survey were required to comply with the National Environmental Policy Act, or NEPA (Public Law 91-190), the Historic Preservation Act of 1966, as amended (Public Law 89-665), the Archaeological Resources Protection Act (ARPA) of 1979 (Public Law 96-95), Executive Order 11593, and Army Regulation 420-40.

The project area was surveyed on November 21, 1995, by Schenian and Mocas. A total of six person hours were spent surveying the project area. The Food Plot Site (15Hd494) was surveyed March 1, 1994, and October 11, 1995, for a total of six person hours. The materials collected from 15Hd494 and the project documentation will be curated at the University of Louisville Program of Archaeology, on a "permanent loan" basis, under contract number DABT 23-95-C-0102, for curatorial and technical support. Duplicate copies of the documentation will be stored at DPW.

SETTING AND ENVIRONMENTAL BACKGROUND

O'Malley et al. (1980) prepared a detailed description of the setting and environmental background of the Fort Knox base as a whole. This section will focus on the environmental characteristics of the current survey area.

The project area lies in the Mississippian Plateau physiographic region of Kentucky (McGrain and Currens 1978:35). The survey area comprises the edge of a ridge top, a downward ridge slope to the floodplain of Cedar Creek, and a

portion of the floodplain. Elevations in the project area range from 450 to 805 feet.

Soils are classified as Garmon-Fredrick soil association (U.S.D.A. 1975: General Soil Map). Vertrees silt loam is found at the edge of the ridge slope, Crider silt loam is on the ridge slope, and Garmon silt loam is on the steep lower slope. Sensabaugh silt loam composes the well-drained portions of the floodplain, and Newark silt loam composes the poorly-drained portions. A small strip of Frondorf-Lenberg silt loam is on the south bank of Cedar Creek, and a narrow strip of Nolin silt loam is on the north side of the creek (Arms et al. 1979: Maps 9, 13, and 14). Drainage in the project area is into Cedar Creek, a tributary of the Rolling Fork branch of the Salt River.

The portion of the proposed timber area that lies on the northeast side of Cedar Creek had been previously used for tank training. The shovel probes had soil profiles with a considerable mixture of soil layers. The area along the road has been thoroughly borrowed and reshaped. Road construction, powerline installation, and tank training had caused soil disturbance in the portion of the proposed timber area near the junction of 745th Battalion Road and Kelly Road. The Food Plot Site was not shovel probed, but observation of the disked surface indicated that the topsoil was intact except for strips along 745th Battalion Road and Kelly Road that had been borrowed and built up to form the roadbed. The site surface has been disturbed several times by tank tracks since the site was first recorded. The site is not within a tank training area, so it is more likely that this disturbance represents indiscriminate joy-riding by unsupervised trainees.

PREVIOUS RESEARCH

Approximately 26,534 acres of the Fort Knox installation have been surveyed for archaeological sites at some level, primarily in cultural resource management (CRM) studies. Schenian and Mocas (1994a) summarize the archaeological studies conducted on or near the installation through August 1994. This section focuses on the previous research conducted within a 2 km radius of the current project area.

The portion of the project area west of Cedar Creek had been previously surveyed by O'Malley et al. (1980) and no archaeological sites were recorded within the present project area, but prehistoric site 15Hd144 and historic sites 15Hd145 and 15Hd146 were reported in Hunting Area (HA) 84. O'Malley et al. (1980) did not report any sites from HA 82, but Schenian and Mocas (1993) recorded prehistoric sites 15Hd483 and 15Hd484 and an isolated prehistoric find in the hunting area. O'Malley et al. (1980) recorded historic site

15Hd255 during the survey of HA 80. DiBlasi (1986) recorded historic site 15Hd420, which lies slightly outside the boundary of the base, and prehistoric sites 15Hd431 and 15Hd432 during the survey of the Vine Grove/Radcliff Interstate-65 connector. An isolated prehistoric find (15Hd147) was recorded during the O'Malley et al. (1980) survey of HA 83. O'Malley et al. (1980) reported historic sites 15Hd185 and 15Hd188 in HA 89.

Prehistoric site 15Hd488 was recorded by Schenian and Mocas (1994b) during their survey of the Cedar Creek airstrip. Prehistoric site 15Hd490 was recorded by Mocas (1994) during the survey of the Yano-Cedar Creek road. Prehistoric site 15Hd462 and historic sites 15Hd463 and 15Hd464 were recorded by Schenian and Mocas (1992) in a survey of a timber harvest area in HA 88. O'Malley et al. (1980) surveyed HA 90 and Schenian and Mocas (1992) examined another portion of the HA 90 and a portion of HA 84 during a timber survey, but in neither project were sites encountered within 2 km of the present project area.

Of particular relevance to the present survey are a number of prehistoric sites found in the floodplain of Cedar Creek. Schenian and Mocas found prehistoric site 15Hd494 at the confluence of a small tributary and Cedar Creek, directly across 745th Battalion Road from the present project area. Prehistoric site 15Hd159, which lies near the north end of the present project area, was recorded by O'Malley et al. (1980) during the survey of HA 88. Prehistoric sites 15Hd229 to 15Hd231 and 15Hd241 to 15Hd243, which are downstream from the present project area, were recorded during the survey of HA 85 (O'Malley et al. 1980).

No archaeological sites near the project area are listed on the National Register or have been formally determined to be eligible for the National Register. No buildings exist in the project area. No buildings, except the Cedar Creek observation tower, which is of recent construction, lie within the viewshed of the proposed timber harvest area. No cemeteries are located in or near the project area.

SURVEY PREDICTIONS

Based on previous archaeological research in the area, the history of settlement, and the environmental setting of the project area, the following results were expected:

- 1) Most of the western portion of the project area is on a hillside that is probably too steep to allow habitation. There is a very low potential for sites on these slopes.

- 2) Because of the rich supply of floral and faunal resources, the portion of the project area in the Cedar Creek floodplain is likely to have had pre-historic occupation or at least specialized activity areas.
- 3) No historic structures are shown in or near the project area on the 1925 oil and gas map (Pirtle and Miller 1925). The project area fell within five properties at the time of Army acquisition ca. 1940. Three of these were owned by members of the Viers family, each of whom owned other properties in the area. Although it is possible that sites associated with these most recent private owners exist in the project area, there is a low potential due to the ownership of multiple properties and lack of evidence of structures on the 1925 map.
- 4) The portions of the project area directly adjacent to 745th Battalion Road are likely to have been disturbed by construction of that road. The proposed timber harvest area parallels an overhead powerline, and some disturbance is expected as a result of the installation of this line. A previous survey (Schenian and Mocas 1992) documented considerable borrowing of the area for road construction, and the floodplain showed considerable disturbance from tank training.

FIELD METHODS

O'Malley et al. (1980) surveyed the much of the lower half of the project area, and did not locate any archaeological sites in or near the proposed timber harvest tract. A knoll on the ridge top in this previously surveyed area was considered to be a high potential location for an archaeological site. This knoll was spot-checked in the current survey. Drive-by survey of the remainder of the area surveyed by O'Malley et al. that fell within the proposed timber tract showed that the areas to be timbered were too steep or too disturbed to have any potential for sites, and these were not surveyed.

The woods in the previously unsurveyed portions of the project area were systematically walked in transects spaced approximately 10 m apart in a sufficient number of transects to cover the width of the timber harvest tract as indicated by trees marked with blue paint. The woods contained scattered large trees, with an understory that consisted primarily of scattered spindly weeds and saplings. Some brambles and vines also were present near the edges of the woods. Fallen leaf cover was present throughout the area. Ground

surface visibility was generally less than 25 percent, except on animal trails and stream banks, which had nearly 100 percent ground surface visibility. Much of the ground surface could be examined by scraping aside the leaves, or by examining game trails and rodent burrows.

Shovel probes were excavated where visibility was restricted for greater than 10 m within a transect and there was no obvious surface evidence of prior disturbance (e.g., bulldozer piles). Each shovel test was approximately 30 cm square at the ground surface and excavated until subsoil was encountered. The fill was trowel sorted prior to the back-filling of the probe.

In December 1993, a Fort Knox Fish and Wildlife employee discovered a biface in a wildlife food plot tract in which he was working and brought the artifact to the contract staff archaeologists. Investigation of the site was delayed until the field was next disked. The archaeologists investigated the find spot in March 1994, shortly after it was plowed. Some crop stubble was present on the site, but visibility was generally 50 to 90 percent. It was determined that the biface was not an isolated find, but had come from an extensive archaeological site (Figures B-1 and B-2). A surface collection was made, but no shovel testing was conducted during the March 1994 visit, because soldiers began conducting training exercises in the vicinity and the archaeologists felt they should get out of the way. A site form was completed, and state site number 15Hd494 was obtained for the site. A controlled surface collection was made of a portion of 15Hd494 in November 1995 (Figure B-3). No shovel testing was conducted at that time, because the rows of wheat were planted too close together to permit shovel testing without crop damage.

In summary, no archaeological sites were found in the proposed timber harvest area. One archaeological site had been previously discovered as an accidental find near the project vicinity and was re-investigated in conjunction with this survey. The following sections will discuss this site.

ARTIFACT TYPOLOGY AND MATERIALS RECOVERED

The following paragraphs summarize the artifact definitions used in the sorting and analysis of the materials in this project. All the artifacts are from site 15Hd494. Table 1 summarizes the location and quantities of prehistoric artifacts recovered during the two surveys of the site. Selected artifacts from 15Hd494 are shown in Figures 2 and 3.

TABLE 1. Prehistoric Artifacts from 15Hd494.

	utilized or --retouched--										-----unutilized-----					Chert				
	*Pp	Dr	Bf	Un	Sc	Pr	Se	Te	Sh	Co	Pr	Se	Te	Bl	Sh	Mf	Hs	total	Po	TOTAL
General Surface 94																				
local	2	0	1	1	0	0	0	0	0	0	4	7	13	0	3	0	0	31		
Wyandotte	0	0	0	0	0	0	6	3	0	0	0	9	25	0	21	0	0	64		
General Surface 94 Total	2	0	1	1	0	0	6	3	0	0	4	16	38	0	24	0	0	95	0	95
Wyandotte Concentration																				
local	0	0	1	0	0	0	0	0	0	0	0	1	8	0	3	0	0	13		
Wyandotte	0	0	1	0	0	0	1	9	0	0	0	4	29	0	10	2	0	56		
Wyandotte Conc. Total	0	0	2	0	0	0	1	9	0	0	0	5	37	0	13	2	0	69	0	69
General Surface 95																				
local	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		
Wyandotte	0	0	0	0	0	0	1	2	1	0	0	2	5	0	0	0	0	11		
General Surface 95	0	0	0	0	0	0	1	2	1	0	0	2	6	0	0	0	0	12	0	12
Block 1																				
local	0	0	0	0	0	1	0	4	0	2	0	20	8	0	11	0	0	46		
Wyandotte	2	0	1	0	0	0	4	7	2	0	0	3	17	0	14	0	0	50		
Block 1 Total	2	0	1	0	0	1	4	11	2	2	0	23	25	0	25	0	0	96	1	97
Block 2																				
local	0	0	2	0	0	0	0	1	0	2	1	13	6	0	7	0	0	32		
Wyandotte	0	2	0	0	0	0	4	10	3	0	2	10	44	0	15	3	1	94		
Block 2 Total	0	2	2	0	0	0	4	11	3	2	3	23	50	0	22	3	1	126	0	126
Block 3																				
local	0	0	0	0	0	0	0	0	0	2	1	6	0	4	1	0	0	14		
Wyandotte	0	0	0	0	0	0	3	8	0	0	0	2	4	0	1	0	0	18		
Block 3 Total	0	0	0	0	0	0	3	8	0	2	1	8	4	4	2	0	0	32	0	32
Block 4																				
local	0	0	0	0	0	0	0	0	0	0	3	3	2	5	2	0	0	15		
Wyandotte	0	0	0	0	0	0	0	4	0	0	1	0	7	0	3	0	0	15		
Block 4 Total	0	0	0	0	0	0	0	4	0	0	4	3	9	5	5	0	0	30	0	30
Block 5																				
local	0	0	0	0	1	0	1	2	0	0	0	3	5	0	1	0	0	13		
Wyandotte	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2		
Block 5 Total	0	0	0	0	1	0	1	2	0	0	0	3	6	0	2	0	0	15	0	15
Site																				
local	2	0	4	1	1	1	1	7	0	6	9	53	43	9	28	0	0	165		
Wyandotte	2	2	2	0	0	0	19	43	6	0	3	30	132	0	65	5	1	310		
SITE TOTAL	4	2	6	1	1	1	20	50	6	6	12	83	175	9	93	5	1	475	1	476

* Pp = projectile point, Dr = drill, Bf = biface, Un = uniface, Sc = scraper, Pr = primary flake, Se = secondary flake, Te = tertiary flake, Bl = blocky chert piece, Sh = chert shatter, Mf = microflake, Co = core, Hs = hammerstone, Po = pottery.

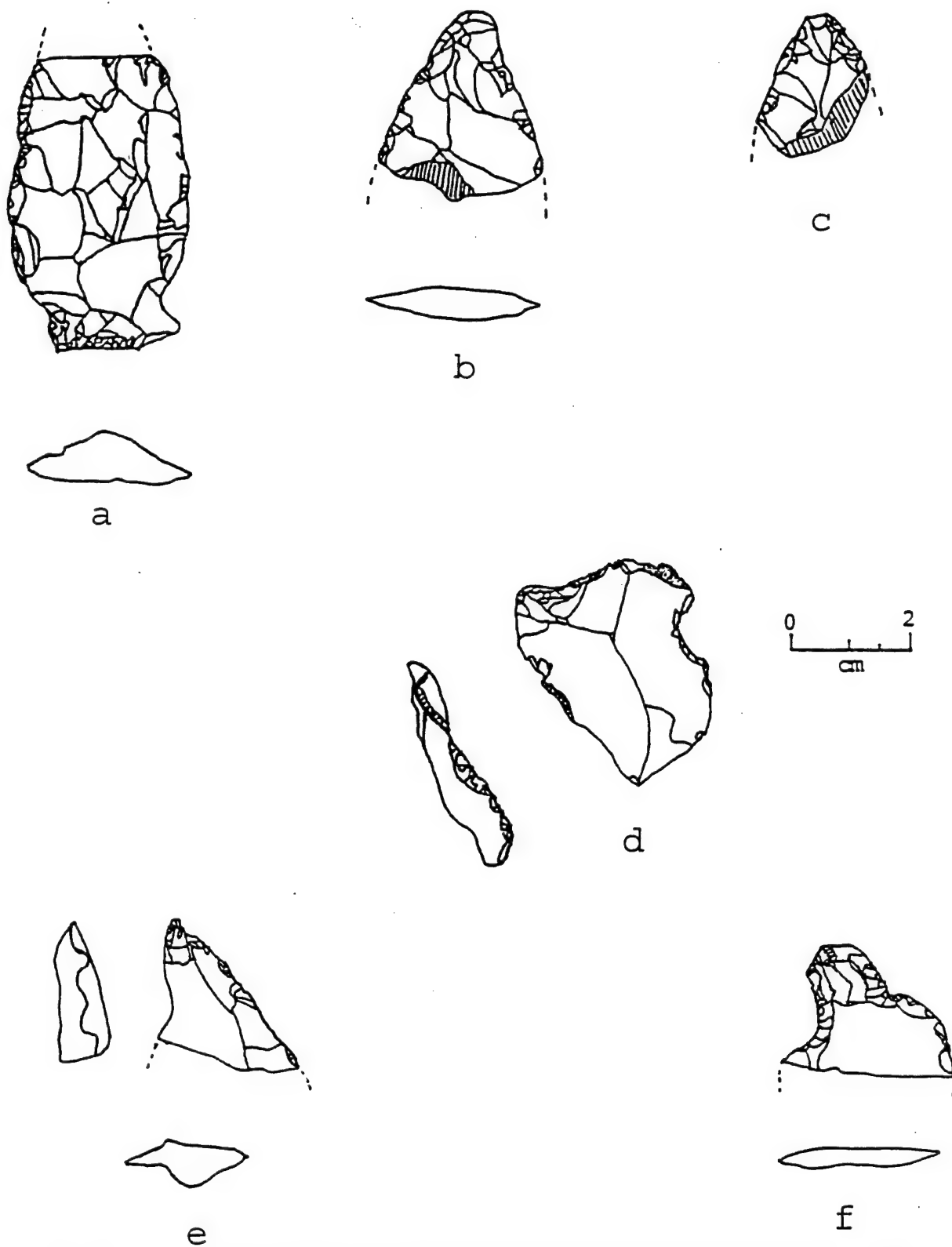
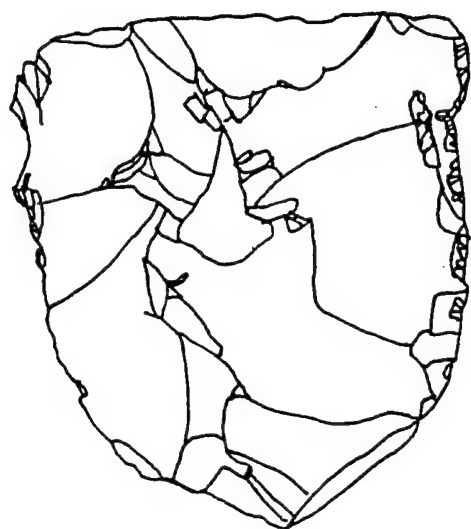
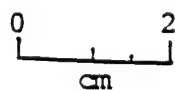


Figure 2. Projectile Points, Unifacial Flake Knife, Perforator, and Drill from 15Hd494.



a



b

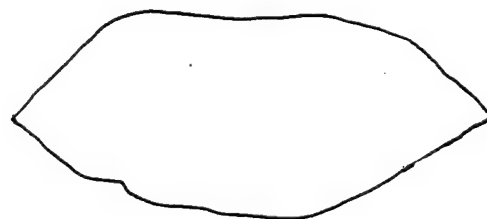


Figure 3. Bifaces from 15Hd494.

Prehistoric Artifact Typology

Pottery

Prehistoric pottery sherds are fragments of fired vessels or objects, usually recognized by the laminated structure of the paste and by the rock, shell, or other inclusions added to facilitate firing, increase strength, or improve workability of the clay. Baked clay lacks the laminated structure characteristic of clay formed into pottery. Baked clay results from the purposeful or accidental firing of clay used to line firepits, plaster over structure frames (in which case it is daub), or from activities other than the manufacture of pottery. One sherd of grit-tempered, cordmarked Early Woodland pottery (Mocas 1988) was found in Block 1 of the 1995 collection area.

Projectile Point

A projectile point is a bifacially worked chipped stone tool that generally is assumed to have been hafted for use as a hunting implement, such as a spear head or arrowhead, but may have an alternate or additional use as a cutting or perforating implement. One Late Archaic McWhinney Heavy Stemmed (Justice 1987:136-139) projectile point (Figure 2a), found in the east-central portion of the site, and a basal fragment of a straight-stemmed point were recovered in 1994. One probable Early Woodland Turkeytail projectile point fragment (Figure 2b) (Justice 1987:173-179) and one projectile point tip (Figure 2c) were found within a concentration of Wyandotte chert in Block 1.

Drill

A drill is a chipped stone tool characterized by the presence of a parallel-sided or tapered shaft. This tapered shaft is formed by the bifacial removal of small flakes, and usually has a rhomboidal to circular cross-section. A perforator is a chipped stone tool with a sharp, narrow tip or point, suitable for use in puncturing another object, but lacking the elongated tapering shaft and typical cross-section of a drill as defined above. One perforator (Figure 2e) and one drill fragment (Figure 2f) were found within Block 2.

Biface

A biface is a chipped stone tool that has had flakes removed from two opposite surfaces along one or more edges. There is considerable variety in the size and shape and the

refinement of flaking of bifaces. Bifaces may be quarry blanks or tool blanks, preforms for projectile points or other tools, cutting or chopping tools, or may serve other functions. They also represent tools broken or discarded during various stages of manufacture. One large, ovate biface (Figure 3b) was found by the Fort Knox Fish and Wildlife staff and given to the staff archaeologists when the site was initially reported. One fragment of a similar tool (Figure 3a) and one minute lateral fragment of a biface or projectile point were recovered from the Wyandotte chert concentration in 1994. One biface lateral fragment was found in Block 1 and two fragments of bifaces broken early in the manufacturing process were recovered from Block 2 in 1995.

Scraper

A scraper is a chipped stone tool formed by the removal of a continuous series of steep flakes from a single surface of a tool. Those tools with flakes removed along one or both lateral edges are "side scrapers," and those with flakes removed from the end of the tool are "end scrapers." Occasionally, one or both lateral edges and the end were used for scraping. One side scraper was found in Block 5.

Uniface

A uniface is a chipped stone tool, usually made from a flake, formed by the removal of flakes from only one surface along one or more edges. Unifaces are believed to have functioned as cutting or scraping tools. One flake of Wyandotte chert discovered in 1994 was retouched at the bulb of percussion to form a graver or cutting point, and a concave area of retouch on the transverse edge formed a graver spur (Figure 2d).

Core

A core is chert cobble or tabular piece of chert from which flakes have been removed for later modification or use as tools. A tested cobble is a piece of chert raw material that was flaked to ascertain its suitability for use in the manufacture of tools. Two tested pieces of Muldraugh chert were found in Block 1, two were found in Block 2, and two were recovered in Block 3 during the 1995 survey.

Hardstone Tool

Hardstone tools are formed by the grinding or pecking of stone and may be manufactured from chert, limestone, sandstone or a variety of sedimentary, igneous and metamorphic rocks. These tools may be shaped prior to use or formed

through use. A hammerstone is a cobble or other piece of rock with one or more battered areas on the periphery that suggests its use for percussion. One small nodule of Wyandotte chert that may have functioned as a hammerstone was found in Block 2.

Chert Debitage

Chert debitage is a category used to describe the lithic debris created as a by-product of the manufacture of more formally defined chipped stone tools. Debitage is divided into utilized and retouched flakes, non-utilized flakes, microflakes, blocky chert pieces, and shatter. Non-utilized flakes are classified by stage of manufacture, and utilized and retouched flakes by evidence for use as informal, or expedient, tools. The following criteria were used to sort the chert debitage in this study:

- 1) Flakes have a striking platform and a bulb of percussion. Concentric rings or ripple marks on the ventral surface and feather terminations also may be present. Primary flakes have 90 percent or more of the dorsal surface (the side opposite the bulb of percussion) covered by cortex or rind; secondary flakes have one to 90 percent of the dorsal surface covered by cortex; and tertiary flakes have no cortex present on the dorsal surface.
- 2) Shatter is a flat, generally small, chert piece exhibiting some flake-like characteristics, which is insufficiently complete to classify it as a primary, secondary or tertiary flake.
- 3) A blocky chert piece is an angular chert piece lacking flake-like characteristics and lacking evidence of having served as a core.
- 4) A microflake is a complete flake less than 6 mm in length and, generally, is the product of fine retouch or resharpening of a tool.
- 5) Utilized chert flakes have at least three contiguous small flakes removed from one or more edges by use rather than retouch. Retouched flakes show localized removal of a small number of flakes to produce a specialized cutting, scraping, or perforating edge.

Despite the fact that the nearest outcrop of Wyandotte chert is more than 15 km away, 65 percent of the debitage collected from 15Hd494 is Wyandotte chert. The presence of some Wyandotte flakes with high percentages of dorsal cortex

suggests that some complete nodules may have been transported to the site. However, the general lack of cortical debris suggests most of the chert entered as partially reduced quarry blanks or finished tools.

Eighty-eight percent of the 77 utilized or retouched flakes were made of Wyandotte chert. During the 1994 survey, it was noted that the Wyandotte chert was primarily at the east end of 15Hd494 and that there were several concentrations of Wyandotte flakes. This was verified during the 1995 survey. The utilized and retouched flakes form a data set worthy of investigation.

Identification of intentional use wear and retouch is frequently a problem in areas exposed to wheeled and tracked vehicles, however, the site has not been extensively crossed by vehicular traffic. An additional problem is encountered when an attempt is made to determine which of the flakes were accidentally fractured. Some flakes were intentionally broken for use as burins or fractured to produce an edge that in combination with concave or straight edge retouch produced a graver spur or pointed edge. Determinations that a flake had been culturally altered were based on the retouch and use wear on and adjacent to the possible working edge. Several flakes appeared to have been retouched to form a denticulate edge.

Historic Artifact Typology

South (1977:95-95) defined a system of artifact classification based on function. Under South's system, for example, ceramics are kitchen group artifacts, nails are architectural group artifacts, and horseshoes are transportation group artifacts.

Two historic artifacts, both ceramic sherds, were collected from 15Hd494 during the 1995 controlled surface collection. One additional historic sherd was collected from 15Hd494 in 1994, but mistakenly discarded as deriving from an isolated secondary refuse episode, before additional historic materials were discovered.

Historic ceramics are divided into coarse earthenware, stoneware, ironstone, refined earthenware, semi-porcelain, and porcelain. Coarse and refined earthenware have the most porous paste, stoneware and ironstone have less porous paste, and semi-porcelain and porcelain have the least porous paste. Each of these broad categories is further divided into more specific types based on paste texture and color, glaze characteristics, and decoration (Maples 1991).

One coarse earthenware sherd was collected from Block 2 of 15Hd494. It is a redware sherd. Redware is most common

from 1750 to 1870 (Ketchum 1983:51), although terra cotta and non-kitchen redware vessels have been made to the present date. The sherd has brownish-red glaze on both the interior and exterior surface. Much of the glaze is exfoliated, but the scraps that remain are very glossy, suggesting a high lead content. Both Mocas and Schenian feel that the piece has a very old appearance, but this is based on an intuitive comparison with redware sherds they have discovered on other sites rather than on any objective standard.

One creamware sherd was recovered from Block 1 of the 1995 collection area and the item collected in 1994 but discarded was a whiteware sherd. Creamware and whiteware are refined earthenware. Creamware has a yellowish or cream-colored paste and a clear lead glaze that has a yellowish or greenish tinge (Price 1979:10). The creamware sherd is a rim sherd with the remnants of a handpainted decoration in a stylized floral pattern. Creamware dates from 1762 to 1820 (South 1977:212), although the earlier end of this range is unlikely in this region. Whiteware has a white glaze and white paste (Price 1979:11). Whiteware dates from 1830 to 1890 (Smith 1983:171).

CULTURAL RESOURCE

15Hd494

Site 15Hd494, the Food Plot Site, was recorded when two of the Fort Knox Fish and Wildlife staff reported the discovery of a biface in one of the food plots. The Food Plot Site is composed of several small camps or special activity loci. Late Archaic and Early Woodland components have been identified, as well as a possible early nineteenth century historic component.

The site is located in the floodplain of Cedar Creek, approximately 30 m north of a tributary of Cedar Creek and 60 m northeast of the confluence of the tributary and Cedar Creek. The majority of the site is located in the food plot area, which had been disked prior to both surveys. Cultural material was gathered from an area approximately 300 m long (east-west) by 25 m. The western edge of the site was disturbed by construction of 745th Battalion Road, and the north edge was truncated by borrowing and building of the elevated roadbed of a gravel road. The southern end of the site extends into a stand of trees along the tributary, and the eastern end of the site is marked by a bend in the tributary.

The location of the Food Plot site offers access to a variety of natural resources, especially those associated with Cedar Creek, a perennial stream that contains fish and serves as an attractant to water fowl and small and large

game. Despite its proximity to water, the site is above flood level. Cedar Creek and its tributaries cut through the Salem, Harrodsburg, and Muldraugh limestones of the surrounding bluffs, and the streambeds are a rich source of moderate to high quality chert.

During March 1994 the entire exposed portion of the site was surveyed under good field conditions (60 percent visibility). It was determined that the majority of the cultural material is in the western 120 m of the site, the center of the site had a small amount of material, and only a few flakes were found at the eastern end. There was a scatter of chert flakes and fire-cracked rock throughout the west and central portions of the site, including several small clusters, and a concentration of Wyandotte chert, measuring 30 m east-west by 3 m, in the northwest portion of the site.

The concentration contained two bifaces, 10 utilized or retouched flakes, and 45 unutilized flakes (mostly biface reduction debris) made of Wyandotte chert and 12 flakes of local chert. East of the concentration the amount of cultural material decreased abruptly, though at least one distinct concentration of fire-cracked rock and debitage was present in the center of the site. A Late Archaic McWhinney Heavy Stemmed point was found in the east-central portion of the site and may be from a different component than the Wyandotte chert concentrations.

The western portion of the site was reexamined in October 1995 under good field conditions. The first 45 m east of 745th Battalion Road was disturbed and overgrown with weeds and high grass. The remainder of the plot had been recently disked and offered 60 percent visibility for the first 50 m and 30 to 40 percent visibility in the next 50 m. Five 20 m by 20 m blocks at the west end of the disked area were surface collected and the contents bagged separately by block.

The reexamination of the area of highest density of cultural material corroborated the previous findings. Distinct concentrations of debitage and tools were observed in Blocks 1 and 2. The concentration in Block 1 contained a large number of Wyandotte flakes and a Turkeytail projectile point fragment, one projectile point tip, and one cordmarked, grit-tempered pottery sherd within an area approximately 3 m in diameter. Block 2 contained one drill, one perforator, and clusters of chert flakes. There was a light scatter of fire-cracked rock throughout Blocks 1 and 2, and progressively lesser amounts of chert and fire-cracked rock in Blocks 3, 4, and 5.

An initial collection was made in the vicinity of Block 1 before the area was subdivided. This collection consisted of 12 flakes (11 Wyandotte), four of which had use wear or graver spurs. Block 1 contained a large number (n=13) of

utilized and retouched flakes and biface reduction flakes of Wyandotte chert. The utilized and retouched flakes display not only cutting and scraping edges but also graver spurs and at least one has a burin edge. Forty-eight percent of the flakes ($n=44$) in the concentration were made of local chert available in the nearby streambeds (primarily, if not exclusively, from the Muldraugh limestone). Most were secondary decortication flakes from tabular blocks, though five showed possible retouch or use wear.

The flakes from Block 2 ($n=119$) appear to derive primarily from late stage reduction or resharpening and are smaller and show less distinct evidence of use wear and retouch than the flakes from Block 1. The debitage from these two blocks may reflect different activities. Seventy-six percent of the flakes, including all but one of the 18 utilized and retouched flakes, were Wyandotte chert.

Block 3 had significantly fewer chert flakes ($n=30$) than the blocks to the west, but 36 percent (all Wyandotte) of these show use wear or retouch and many have graver spurs. Forty percent of the flakes are local chert, mostly blocky cortical fragments. Block 4 had the same amount of debitage and even fewer Wyandotte flakes. All four of the utilized and retouched flakes are made of Wyandotte chert, and three have graver spurs, including one flake with six spurs. Half of the chert sample was Wyandotte, mostly tertiary flakes from biface reduction, and the flakes of local chert were mostly blocky cortical pieces. Block 5 contained noticeably fewer flakes ($n=15$) than the other blocks, and only two flakes were Wyandotte chert. This was the only block in which the majority of the local chert flakes had definitely been heat treated -- though reddened flakes were found elsewhere, they generally appeared to have been incidentally fired. It is plausible that the cultural material from this unit derived from a component other than the one that yielded the Wyandotte concentrations.

The large concentration of Wyandotte chert and the smaller concentrations of debitage and firecracked rock observed during the initial survey of the site and the two Wyandotte chert concentrations identified during the resurvey all suggest that intact subsurface cultural features may exist on the site. The presence of concentrations of Wyandotte chert is important for several reasons. This high quality raw material is preferred during some cultural-temporal periods, especially the Early Woodland, which is poorly documented in the region. Recovery of an Early Woodland Turkeytail projectile point fragment and a sherd of Early-Middle Woodland pottery during the resurvey substantiate the presence of an Early Woodland component at the site.

Abundant high quality cherts from the Muldraugh limestone and possibly the Salem and Harrodsburg limestones were available within less than 100 m of the site, and high qual-

ity chert from the St. Louis limestone was available within several kilometers to the west; however, even the smallest isolated outcrops of Wyandotte chert were more than 15 km away. As exemplified at 15Hd494, Wyandotte chert was preferred for the manufacture of expedient cutting, scraping, and engraving tools, and clusters of these tools are often accurate indicators of activity areas and pit features. Analysis of the functions of these tools may provide insight into the types of specialized activities engaged in by the inhabitants of the site.

A total of three historic artifacts (one redware sherd, one whiteware sherd, and one creamware sherd) were collected from 15Hd494, but one was mistakenly discarded. Although this is a very small sample, it is interesting because of the age of the materials, which suggest a historic activity in the vicinity of this site in the late eighteenth to mid-nineteenth century. All three materials were found in the Block 1 and Block 2 areas. It is possible that additional historic cultural material lies in the woods.

The prehistoric components of site 15Hd494 are considered potentially eligible for the National Register because of the presence of distinct activity loci and the possibility of intact features. It is also considered potentially eligible because there is a need for data about the Early Woodland cultural-temporal period in the central Ohio Valley that might be provided through further study of this site. If further study of the site identifies a more substantial historic component and confirms the suspected early date of this component, the historic component might be associated with the early settlement of the region and therefore also potentially eligible for the National Register.

CONCLUSIONS AND RECOMMENDATIONS

The Phase I literature search determined that much of the southern part of the proposed timber harvest area had been previously inspected with negative results and that most of the northern part had been previously inspected. The high potential areas of the previously inspected portion and all of the area east of Cedar Creek was examined during the present project. No sites were found within the proposed timber harvest area. One prehistoric archaeological site, 15Hd494, was discovered outside the proposed timber area.

Site 15Hd494, with Late Archaic, Early Woodland, and possibly a late eighteenth to early nineteenth century historic component, is considered potentially eligible for the National Register due to the potential for intact cultural features, the possibility of expanding the meager data base on early ceramic-bearing sites in the central Ohio Valley,

and the situation that field conditions were not conducive to its complete assessment.

The site is outside the proposed timber harvest area, however, and the proposed timbering will have no effect on 15Hd494. It is recommended that the installation conduct the timber harvest as proposed.

Although 15Hd494 will not be affected by the timber harvest, it is being adversely affected by unauthorized vehicle traffic over the past two years. The heavy vehicles (primarily tanks) sink so deeply into the soil in muddy conditions that they are probably destroying what were intact features two years ago and are certainly disturbing the plowzone deposits on the site. It is recommended that the installation protect the site by posting signs prohibiting unauthorized vehicle traffic on the site. Continued use of the site as a wildlife food plot (including disking) and for military foot exercises is not expected to have an adverse impact on the site, and it is recommended that these be permitted. A sign which identifies an archaeological site frequently results in the looting of the site, rather than its protection, especially in a remote area. It is suggested that the signs identify the location as a "Protected Resource" rather than as an archaeological site. The installation's endangered species management plan for the gray bat recommends the maintenance of an approximately 70 foot (21 m) buffer zone of vegetation along all streams to help protect the habitat of that species. The unauthorized vehicle traffic on 15Hd494 appears to be causing sedimentation of the nearby Cedar Creek tributary, and it is obvious that some of the vehicles driving through the site are also crossing through the stream, in violation of a Fort Knox directive issued last year to reduce erosion of stream banks and sedimentation and petroleum pollution of installation streams. The protection of installation streams. The protection of 15Hd494 installation streams. The protection of 15Hd494 will result not only in compliance with the requirements of ARPA, AR 420-40, and the National Historic Preservation Act, but will also increase the installation's compliance with Army, federal, and state regulations concerning endangered species and water quality.

In the remote possibility that archaeological materials are discovered during the timber harvesting, all work in the vicinity of the finds must cease and the State Historic Preservation Officer (502-564-7005) and the DPW Staff Archaeologist (502-624-6581 or 502-624-3629) must be contacted, so representatives of those agencies may evaluate the materials. If human remains, regardless of age or cultural affiliation, are discovered, all activity in the vicinity of the remains must cease immediately, and the state medical examiner (502-564-4545) and the appropriate

local law enforcement agency (Fort Knox Law Enforcement Command, 502-624-6852) must be contacted, as stipulated in KRS 72.020.

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APPENDIX A.
RESUMES OF KEY PERSONNEL

Pamela A. Schenian
Contract Staff Archaeologist

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Schenian)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Date and Place of Birth: January 1, 1959; Waukesha, WI.

Present Position: J.M. Waller & Associates/Fort Knox Contract Staff Archaeologist

Education:

A.B.D. in Anthropology, Northwestern University, 1984.
M.A. in Anthropology, Northwestern University, 1982.
A.B. in Anthropology, Bryn Mawr College, 1980.

Previous Employment:

Senior Staff Archeologist, Archeology Service Center, Department of Sociology, Anthropology, and Social Work, Murray State University, Murray, KY, November 1991-June 1993; Staff Archeologist, November 1983-November 1991.

Southern Illinois University, Carbondale, IL: Field Technician, November-December 1985, September-October 1984.

Illinois State Museum Society, Springfield, IL: Field Assistant II (Supervisor), summer 1983; Field Technician, summer 1981.

Center for American Archeology, Kampsville, IL: Field Technician, summer 1982.

Department of Anthropology, Northwestern University, Evanston, IL: Teaching Assistant, 1981-82 academic year.

Great Lakes Archeological Research Center, Milwaukee, WI: Field Technician, summer 1979.

Field Research Experience:

Field experience on prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New Jersey, South Dakota, Tennessee, and Wisconsin, 1979-present.

Professional Publications, Reports, Papers and Manuscripts:
108 CRM contract reports on projects in Indiana, Kentucky, and Tennessee.

1 Homicide site excavation contract report prepared in lieu of court testimony in Illinois.

7 Papers presented at professional conferences.

5 Publications, 1 in press.

Doctoral candidacy qualifying paper: "A Theory of Individual Style Variation for Archeological Studies".

Manuscript submitted in partial fulfillment of the M.A. requirements: "Models of Environmental-Cultural Relationships: Testing with Archeological Evidence".

Stephen T. Mocas
Contract Assistant Staff Archaeologist

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Present Position: University of Louisville Program of
Archaeology/Fort Knox Contract Assistant Staff Archeologist

Education:

Completed one year of doctoral program, Southern Illinois University, Carbondale, Illinois, 1972.

B.A. in Anthropology, University of Louisville, 1971.

Previous Employment:

Indiana University, Bloomington, Indiana: Staff Archaeologist, Part-time September 1991-Present.

Fort Knox/University of Louisville: Contract Assistant Staff Archaeologist, November 1993-December 1994.

Murray State University, Murray Kentucky: Staff Archaeologist, November 1991-November 1993.

Jefferson Community College, Louisville, Kentucky.
Anthropology Instructor, August 1981-December 1982.

Louisville School of Art, Louisville, Kentucky: Anthropology Instructor, January-May 1976.

University of Louisville Archaeological Survey, Louisville, Kentucky. Project Director, Field Supervisor, or Research Assistant on various projects, July 1969-January 1977.

State University of New York of Buffalo, Buffalo, New York. Senior Field Worker, June-August 1970.

Field Research Experience:

Field experience, Phase I-III, prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New York, and Tennessee, 1969-present.

Research Grants:

Six grants for fieldwork and research.

Professional Publications, Reports, Papers and Manuscripts:

5 Non-contract site reports on projects.

29 CRM contract reports on projects.

5 Chapters in additional site reports.

5 Publications.

APPENDIX B.
LOCATION OF 15HD494 AND PLAN VIEW